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Fond du Lac Reservation
Business Committee

1720 Big Lake Rd.
Cloquet, MN 55720
Phone (218) 879-4593
Fax (218) 879-4146

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WATER QUALITY STANDARDS

Joan Karnauskas, Chief
Standards and Applied Sciences Branch
U.S. EPA Region 5
77 W. Jackson Blvd.
Chicago, IL 60604

Sept. 2, 1999

Ms. Karnauskas:

In response to your letter regarding the revisions needed for final U.S. EPA approval of our tribal water quality standards, we are submitting revised pages with the appropriate corrections. As each of the five items in question were fully discussed with Kathy Mayo of the Water Division, we are hopeful that this final submission will address all remaining errors or inconsistencies with the GLI, and that we can indeed proceed with full approval.

With our tribal water quality standards in place, and a two-year baseline monitoring project underway, we are in a position to consider the next step in implementation: Section 401 Water Quality Certifications. Within our Division of Resource Management's Environmental Program, our tribal Office of Water Protection will be the organizational unit responsible for 401 certifications. Our Environmental Scientist, Nancy Costa, and our Wetlands Specialist, Rick Gitar, are beginning to outline the process that the Band intends to use to make certification decisions. Working within the framework of the Fond du Lac Civil Code, they will also determine how disputes may be resolved, should a permittee appeal a decision by the Band to object to a permit application.

We look forward to receiving a formal letter of approval of our tribal water quality standards from U.S. EPA, as we move forward in our efforts to protect the waters of the Reservation.

Sincerely,

Robert B. Peacock

Robert B. Peacock, Chairman

cc: Bob Newport
Kathy Mayo

adequate supply of drinking water for the continuation of the health and well-being of the residents of the Fond du Lac Reservation.

rr. **Reservation Business Committee** shall mean the governing body of the Fond du Lac Band of Lake Superior Chippewa.

ss. **Secondary Contact Recreational** shall mean the recreational use of a stream, reach, lake or impoundment in which contact with the water may, but need not, occur and in which the probability of ingesting water is minimal. Examples are fishing and boating.

tt. **Species mean acute value (SMAV)** is the geometric mean of the results of all acceptable flow-through acute toxicity tests (for which the concentrations of the test material were measured) with the most sensitive tested life stage of the species. For a species for which no such result is available for the most sensitive tested life stage, the SMAV is the geometric mean of the results of all acceptable acute toxicity tests with the most sensitive tested life stage.

uu. **Total Maximum Daily Loan (TMDL)** shall mean the sum of the individual wasteload allocations for point sources and load allocations for nonpoint sources and natural background. A TMDL sets and allocates the maximum amount of a pollutant that may be introduced into a water body and still assure attainment and maintenance of water quality standards.

vv. **Toxic** shall mean harmful to living organisms.

ww. **Toxicity** shall mean the state or degree of being toxic or poisonous, lethal or sub-lethal adverse effects on representative sensitive organisms, due to exposure to toxic materials.

xx. **Toxic unit** means a measure of acute or chronic toxicity in an effluent. One acute toxic unit (Tua) is the reciprocal of the effluent concentration that causes 50 percent effect of mortality to organisms for acute exposures (100/LC50); one chronic toxic unit (Tuc) is the reciprocal of the effluent concentration that causes no observable effect concentration on test organisms for chronic exposures (100/NOEC).

yy. **Turbidity** shall mean a measure of the amount of suspended material, particles or sediment which has the potential for adverse impacts on aquatic biota.

zz. **Warm water fisheries** shall mean a stream, reach, lake or impoundment where water temperature, habitat and other characteristics are suitable for support and propagation

CHAPTER 6

WATER QUALITY STANDARDS AND CRITERIA

Section 601 Applicability

If the maximum permissible levels of a substance as set forth in Appendix 1, Water Quality Standards Applicable to A, B, C1, D1 and D2 Designated Waters are exceeded in any waters of the Fond du Lac Reservation, it shall be considered indicative of a polluted condition which is actually or potentially harmful, detrimental or injurious with respect to the designated uses and shall therefore be considered a violation of this Ordinance.

The ambient water quality standards in Appendix 1 are standards for the protection of aquatic life, human health, and wildlife from the GLI pollutants. The standards for a GLI pollutant include the CS, MS, and FAV. Some pollutants do not have an MS or an FAV because of insufficient data. For these pollutants, Tier II numeric criteria will be calculated according to GLI methodology. The daily human consumption of fish caught by Fond du lac Band mambers is assumed to be 0.060 kg/day. In addition to these standards, the standards contained in 40 C.F.R. Part 141, subparts B & G and Part 143 shall be applicable to the surface waters of the Reservation.

Some of the GLI pollutants listed in this Chapter have both aquatic life and human health standards and four of the GLI pollutants have wildlife standards, as provided in tables 1 to 4 of the GLI Guidance. The most stringent chronic aquatic life, human health, or wildlife standard listed is the applicable standard except when a less stringent chronic or maximum standard applies when setting an effluent limitation. For any aquatic life, human health, or wildlife chronic standard, a blank space in the following tables means no GLI standard is available and the most stringent listed chronic standard is applicable. For the aquatic life MS and FAV, blank spaces mean the GLI guidance lists no MS or FAV.

Standards for metal are expressed as total metal but must be implemented as dissolved metal standards, using appropriate conversion factors. Standards for GLI pollutants followed by (TH) or (pH) vary with total hardness or pH. The formulas for these standards are found in Appendix 2.

Bacteriological standards can be found in Appendix 3.

Appendix 1. Standards Specific to Designated Use

Water Quality Standards Applicable to A, B, C1, D1 and D2 Designated Use Waters							
Substance	Units	Aquatic Life Chronic Standard	Aquatic Life Maximum Standard	Aquatic Life Final Acute Value	Human Health Chronic Standard	Wildlife Chronic Standard	Applicable Chronic Standard
Arsenic, total	ug/l	148	340	680	2		2
Benzene	ug/l				9.5		9.5
Cadmium, total (TH)	ug/l	App. 2	App. 2	App. 2			App. 2
Chlordane	pg/l				28		28
Chlorobenzene	ug/l	10	423	846	230		10
Chromium III, total (TH)	ug/l	App. 2	App. 2	App. 2			App. 2
Chromium VI, total	ug/l	11	16	32			11
Copper, total (TH)	ug/l	App. 2	App. 2	App. 2			App. 2
Cyanides*	ug/l	5.2	22	44	587		5.2
DDT	pg/l				18	11	11
Dieldrin	pg/l	56000	240000	480000	0.81		0.81
2,4-Dimethylphenol	ug/l	21	137	274	336		21
2,4-Dinitrophenol	ug/l	71	379	758	51		51
Endrin	ug/l	0.036	0.086	0.17	0.0039		0.0039
Hexachlorobenzene	pg/l				52		52
Hexachloroethane	ug/l				0.75		0.75
Lindane	ug/l		0.95	1.9	0.057		0.057
Mercury*	ug/l	0.91	1.7	3.4	0.00077	0.0013	0.00077
Methylene Chloride	ug/l				45		45
Nickel, total (TH)	ug/l	App. 2	App. 2	App. 2			App. 2
Parathion	ug/l	0.013	0.065	0.13			0.013
PCBs (class)	pg/l				3.2	122	3.2
Pentachlorophenol (pH)	ug/l	App. 2	App. 2	App. 2	0.93		0.93
Selenium, total	ug/l	5.0	20	40			5.0
2,3,7,8-TCDD	pg/l				0.0010	0.0031	0.0010
Toluene	ug/l	253	1352	2703	3180		253
Toxaphene	pg/l				7.7		7.7
Trichloroethylene	ug/l				19		19
Zinc, total (TH)	ug/l	App. 2	App. 2	App. 2			App. 2

*These do not reflect % lipid adjustment

Water Quality Standards Applicable to A, B, C2, D1 and D2 Designated Use Waters

Substance	Units	Aquatic Life Chronic Standard	Aquatic Life Maximum Standard	Aquatic Life Final Acute Value	Human Health Chronic Standard	Wildlife Chronic Standard	Applicable Chronic Standard
Arsenic, total	ug/l	148	340	680	2		2
Benzene	ug/l				11		11
Cadmium, total (TH)	ug/l	App. 2	App. 2	App. 2			App. 2
Chlordane	pg/l				113		113
Chlorobenzene	ug/l	10	423	846	400		10
Chromium III, total (TH)	ug/l	App. 2	App. 2	App. 2			App. 2
Chromium VI, total	ug/l	11	16	32			11
Copper, total (TH)	ug/l	App. 2	App. 2	App. 2			App. 2
Cyanides*	ug/l	5.2	22	44	587		5.2
DDT	pg/l				71	11	11
Dieldrin	pg/l	56000	240000	480000	3.3		3.3
2,4-Dimethylphenol	ug/l	21	137	274	417		21
2,4-Dinitrophenol	ug/l	71	379	758	54		54
Endrin	ug/l	0.036	0.086	0.17	0.016		0.016
Hexachlorobenzene	pg/l				209		209
Hexachloroethane	ug/l				2.8		2.8
Lindane	ug/l		0.95	1.9	0.22		0.22
Mercury*	ug/l	0.91	1.7	3.4	0.00077	0.0013	0.00077
Methylene Chloride	ug/l				46		46
Nickel, total (TH)	ug/l	App. 2	App. 2	App. 2			App. 2
Parathion	ug/l	0.013	0.065	0.13			0.013
PCBs (class)	pg/l				13	122	13
Pentachlorophenol (pH)	ug/l	App. 2	App. 2	App. 2	1.9		1.9
Selenium, total	ug/l	5.0	20	40			5.0
2,3,7,8-TCDD	pg/l				0.0040	0.0031	0.0031
Toluene	ug/l	253	1352	2703	4942		253
Toxaphene	pg/l				31		31
Trichloroethylene	ug/l				27		27
Zinc, total (TH)	ug/l	App. 2	App. 2	App. 2			App. 2

* These do not reflect % lipid adjustment

Appendix 2. Standards that vary with Total Hardness (TH) or pH

a. Designated use A, B, C1, D1, and D2 standards that vary with total hardness (TH) applicable to all surface waters of the Reservation, are listed in this subsection. Total hardness is the sum of the calcium and magnesium concentrations expressed as calcium carbonate in mg/l. For ambient or effluent total hardness values greater than 400 mg/l, 400 mg/l must be used in the calculation of the standard. Exp. is the base e exponential function.

Cadmium total	formula, results in ug/l	Example standards at hardness of: 50	100	200	300	400
CS	exp.(0.7852 [ln (TH mg/l)]-2.715)	1.4	2.5	4.2	5.8	7.3
MS	exp.(1.128 [ln (TH mg/l)] -3.6867)	2.1	4.5	9.9	16	22
FAV	exp.(1.128 [ln (TH mg/l)] -2.9935)	4.1	9.0	20	31	43

Chromium III total	formula, results in ug/l	Example standards at hardness of: 50	100	200	300	400
CS	exp. (0.819[ln (TH mg/l)]+0.6848)	49	86	152	212	268
MS	exp. (0.819[ln (TH mg/l)]+3.7256)	1022	1803	3181	4434	5612
FAV	exp. (0.819[ln (TH mg/l)]+4.4187)	2044	3606	6362	8867	11223

Copper total	formula, results in ug/l	Example standards at hardness of: 50	100	200	300	400
CS	exp. (0.8545[ln (TH mg/l)]-1.702)	5.2	9.3	17	24	30
MS	exp. (0.9422[ln (TH mg/l)]-1.700)	7.3	14	27	39	52
FAV	exp. (0.9422[ln (TH mg/l)]-1.0069)	15	28	54	79	103

Nickel total	formula, results in ug/l	Example standards at hardness of: 50	100	200	300	400
CS	exp. (0.846[ln (TH mg/l)]+0.0584)	29	52	94	132	169
MS	exp. (0.846[ln (TH mg/l)]+2.255)	261	469	843	1188	1516
FAV	exp. (0.846[ln (TH mg/l)]+2.9481)	522	938	1687	2377	3032

Zinc total	formula, results in ug/l	Example standards at hardness of: 50	100	200	300	400
CS	exp. (0.8473[ln(TH mg/l)]+0.884)	67	120	216	304	388
MS	exp. (0.8473[ln(TH mg/l)]+0.884)	67	120	216	304	388
FAV	exp. (0.8473[ln(TH mg/l)]+1.5772)	133	240	431	608	776

b. Designated use A, B, C1, D1 and D2 standards that vary with pH are listed in this subsection. Exp. is the base e exponential function.

Pentachloro-phenol	formula, results in ug/l	Example standards at pH of: 6.5	7.0	7.5	8.0	8.5
MS	exp. (1.005[pH]-4.869)	5.3	8.7	14	24	39
FAV	exp. (1.005[pH]-4.175)	11	17	29	48	79

c. Designated use B, C2, C3, D1 and D2 standards that vary with pH are listed in this subsection. Exp. is the base e exponential function.

Pentachloro-phenol	formula, results in ug/l	Example standards at pH of: 6.5	7.0	7.5	8.0	8.5
CS	exp.(1.005[pH]-5.134) not to exceed 5.5 ug/l	4.0	5.5	5.5	5.5	5.5
MS	exp. (1.005[pH]-4.830)	5.3	8.7	14	24	39
FAV	exp. (1.005[pH]-4.1373)	11	17	29	48	79

d. Conversion factors for transforming total metals to dissolved metals.

Metal	Conversion Factors	
	Acute	Chronic
Arsenic	1.000	1.000
Chromium (III)	0.316	0.860
Chromium (VI)	0.982	0.962
Copper	0.960	0.960
Mercury	0.85	0.85
Nickel	0.998	0.997
Zinc	0.978	0.986

Appendix 3. Bacteriological standards

For designated use D1 (primary contact recreational) waters of the Reservation, density criteria for the indicator species *E.coli* will be used. In bacteriological surveys, the monthly geometric mean is used in assessing attainment of standards when a minimum of five samples are collected in a thirty day period. The monthly geometric mean for *E.coli* shall not exceed 126 organisms/100 ml*. When fewer than five samples are collected in a month, densities of *E.coli* shall not exceed 235 organisms per ml in any single sample.

** 100 mL

*source: USEPA

Calculated to nearest whole number using equation:

$$\text{(Mean } E.coli \text{ density)} = \frac{\text{antilog}_{10} \text{ illness rate}/1000 + 11.74}{9.40}$$

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** 9/23/99 Nancy costa indicated this was a Typographical error & should be 235 organisms/100 mL. K.M.